EPA Region 7 TMDL Review

TMDL ID:	IA 06-FLO-0080_0	**Waterbody ID:**	IA 06-FLO-0080-0
Waterbody Name:	LITTLE FLOYD RIVER		
Tributary:	Unnamed Tributaries		
Pollutant:	DISSOLVED OXYGEN, SEDIMENT		
State:	IA	**HUC:**	10230002
BASIN:			
Submittal Date:	4/28/2005		
Approved:	Yes		

Submittal Letter

State submittal letter indicates final TMDL(s) for specific pollutant(s)/water(s) were adopted by the state, and submitted to EPA for approval under section 303(d) of the Clean Water Act.

The TMDL for Little Floyd River was formally submitted by the Iowa Department of Natural Resources (IDNR) in a letter received by EPA on April 28, 2005.

Water Quality Standards Attainment

The water body's loading capacity for the applicable pollutant is identified and the rationale for the method used to establish the cause-and-effect relationship between the numeric target and the identified pollutant sources is described. TMDL and associated allocations are set at levels adequate to result in attainment of applicable water quality standards.

The use of stressor identification is used to determine the likely causes of impairment to the narrative water quality criteria. These causes are sediment and low dissolved oxygen. Impairment was determined by Little Floyd River's scores in the Fisheries Index of Biological Integrity (FIBI) and Macro invertebrate Index of Biological Integrity (BMIBI). There is also a direct link between dissolved oxygen concentrations and the numeric criterion for dissolved oxygen in Iowa's water quality standards. This will require in a reduction of dissolved oxygen demand of between 2.0 to 3.7 pounds per hour depending on flow and a reduction of 11,600 tons per year of sediment. These reductions are likely to result in the attainment of water quality standards.

Numeric Target(s)

Submittal describes applicable water quality standards, including beneficial uses, applicable numeric and/or narrative criteria. If the TMDL is based on a target other than a numeric water quality criterion, then a numeric expression, site specific if possible, was developed from a narrative criterion and a description of the process used to derive the target is included in the submittal.

Beneficial use of Little Floyd River is protection of aquatic life (Class B(LR)). To meet its designated use the Little Floyd River's biological integrity must score a median BMIBI equal to or greater than 53 and median FIBI equal to or greater than 40 for two consecutive sampling periods. Dissolved oxygen concentrations must also be greater than or equal to 5.0 mg/L for at least 16 hours of every 24 hour period and a minimum of 4.0 mg/L.

Numeric Target(s) and Pollutant(s) of concern

An explanation and analytical basis for expressing the TMDL through surrogate measures (e.g., parameters such as percent fines and turbidity for sediment impairments, or chlorophyll-a and phosphorus loadings for excess algae) is provided, if applicable. For each identified pollutant, the submittal describes analytical basis for conclusions, allocations and margin of safety that do not exceed the load capacity.

The linkage is defined through the Stressor Identification for The Little Floyd River. This document identifies the most likely causes for lowered scores on indexes of biological integrity as dissolved oxygen and sediment. The link is also direct for dissolved oxygen as measured concentrations of dissolved oxygen were found below 4.0 mg/L.

Source Analysis

Important assumptions made in developing the TMDL, such as assumed distribution of land use in the watershed, population characteristics, wildlife resources, and other relevant information affecting the characterization of the pollutant of concern and its allocation to sources, are described. Point, non point and background sources of pollutants of concern are described, including magnitude and location of the sources. Submittal demonstrates all significant sources have been considered.

For dissolved oxygen the impairment is described as the difference in dissolved oxygen concentration expressed as pounds per hour and the number of pounds per hour which are required to correspond to a dissolved oxygen concentration of 5.0 mg/L. This difference is defined as a demand on dissolved oxygen that is not being supplied in the river. Impaired dissolved oxygen concentrations in the river occur during flows of 19 cubic feet per second (cfs) or lower with minimum water temperatures of 20 degrees Celsius. The TMDL gives example of calculations at three flow levels. Sources for this demand are nonpoint in origin and will be more specifically identified and allocated in Phase 2 of this TMDL.

Sediment impacts were identified in the stressor identification based on the percent of silts in the river substrate. The existing load was determined using the RUSLE and NRCS Erosion and Sedimentation Delivery procedure. FIBI and BMIBI scores at or below the 25th percentile are considered impaired, therefore, the target for percent silt in Little Floyd is set at the 25th percentile median percent silt in reference streams in the same ecoregion. Sources for sediment are sheet and rill erosion from agricultural land, streambanks and gullys.

It appears all major sources have been considered.

Allocation

Submittal identifies appropriate wasteload allocations for point, and load allocations for nonpoint sources. If no point sources are present the wasteload allocation is zero. If no nonpoint sources are present, the load allocation is zero.

The allocation is dependant on flow and temperature for dissolved oxygen. The allocation of sediment is based on a 1:1 relationship between eroded sediment and percent silt found in the river's substrate.

WLA Comment

There are no point source discharges. The WLA is set to zero for both dissolved oxygen demand and sediment.

LA Comment

The load allocation is set for dissolved oxygen as the demand not being met in the stream at various flow levels. For 19 cfs flow the oxygen demand LA is set at 16.8 pounds per hour, for 7.5 cfs the oxygen demand LA is set at 1.6 pounds per hour.

The load allocation for sediment is set at 7,920 tons per year.

Margin of Safety

Submittal describes explicit and/or implicit margin of safety for each pollutant. If the MOS is implicit, the conservative assumptions in the analysis for the MOS are described. If the MOS is explicit, the loadings set aside for the MOS are identified and a rationale for selecting the value for the MOS is provided.

The margin of safety for oxygen demand is explicit at 10 % of the TMDL (1.9 pounds per hour at a flow of 19 cfs and 0.2 pounds per hour at 7.5 cfs). The MOS for oxygen demand is also implicit as the target concentration used to develop the required dissolved oxygen load in the stream was set at 5.0 mg/L when the standards allows a concentration of 4.0 mg/L for up to eight hours per 24 hours.

The MOS for sediment is explicit at 880 tons per year which is 10% of the TMDL.

Seasonal Variation and Critical Conditions

Submittal describes the method for accounting for seasonal variation and critical conditions in the TMDL(s).

The dissolved oxygen impairment is only seen at low flows with minimum water temperatures of 20 degrees Celsius. The TMDL for sediment applies throughout the year and is expressed as an annual load.

Public Participation

Submittal describes public notice and public comment opportunity, and explains how the public comments were considered in the final TMDL(s).

A public meeting was held June 15, 2004 with the O"Brien Soil and Water Conservation District. A review of the draft TMDL was held January 21, 2005. Comments were received from the Iowa Farm Bureau and Scott Osborne.

Monitoring Plan for TMDL(s) Under Phased Approach

The TMDL identifies the monitoring plan that describes the additional data to be collected to determine if the load reductions required by the TMDL lead to attainment of WQS, and a schedule for considering revisions to the TMDL(s) (where phased approach is used).

Further monitoring of the Little Floyd River will meet the minimum guidelines established under Iowa"s 305(b) guidelines. The data will be collected by 2012.

Reasonable assurance

Reasonable assurance only applies when reductions in nonpoint source loading is required to meet the prescribed waste load allocations.

There are no point source loadings in the watershed so reasonable assurance is not required.